What is claimed:

1. An osmolarity measuring system, comprising:

a fluid sample receiving chip comprising a fluid receiving substrate; and

sample delivery system configured to deliver a sample of fluid to the sample receiving substrate, the sample delivery system comprising:

a receiving device configured to capture a collection device used to collect the sample fluid,

a translation system configured to position the collection device in proximity with the fluid receiving substrate, and

an expulsion device configured to deliver the sample of fluid to the fluid receiving substrate.

2. The osmolarity measuring system of claim 1, wherein the receiving substrate comprises a microelectrode array.

3. The osmolarity measuring system of claim 1, wherein the collection device is a capillary tube.

4. The osmolarity measuring system of claim 1, wherein the sample fluid comprises an aliquot of tear film.

5. The osmolarity measuring system of claim 1, wherein the receiving device comprises a first rubber plug configured to capture the collection device.

6. The osmolarity measuring system of claim 5, wherein the receiving device comprises a second rubber plug configured to capture the collection device.

7. The osmolarity measuring system of claim 1, wherein the receiving device comprises forceps configured to capture the collection device.

8. The osmolarity measuring system of claim 7, further comprising a thumb screw coupled to the forceps, the thumb screw configured to control the forceps.

9. The osmolarity measuring system of claim 7, further comprising a computer coupled to a pressure sensor on the forceps, the computer configured to control the forceps.

10. The osmolarity measuring system of claim 1, wherein the receiving device comprising a block, wherein the block includes a groove, the groove configured to receive the collection device.

11. The osmolarity measuring system of claim 10, wherein the block is an angled block.

12. The osmolarity measuring system of claim 10, further comprising a hinged door configured to apply pressure to the collection device.

13. The osmolarity measuring system of claim 1, wherein the translation system is configured to adjust the vertical position of the collection device.

14. The osmolarity measuring system of claim 13, wherein the translation system comprises a non-tapered cylindrical screw.

15. The osmolarity measuring system of claim 14, wherein the translation system further comprises a control system and a motorized screw rotor coupled to the non-tapered cylindrical screw.

16. The osmolarity measuring system of claim 13, wherein the translation system comprises a coarse translation screw and a fine translation screw.

17. The osmolarity measuring system of claim 13, further comprising a control system configured to communicate with the translation system and position the collection device in proximity with the receiving substrate.

18. The osmolarity measuring system of claim 17, wherein the control system comprises an optical control system configured to identify when the capillary tube interrupts a light source near the receiving substrate.

19. The osmolarity system of claim 13, wherein the receiving substrate comprises a microelectrode array, with an associated electric

field that extends a certain vertical distance form the surface of the receiving substrate, and wherein the translation system uses the electric field to position the collection device in relation to the surface of the receiving substrate.

20. The osmolarity measuring system of claim 19, wherein the translation system is configured to stop lowering the collection device when the collection device is close enough to the receiving substrate to interrupt the electric field.

21. The osmolarity measuring system of claim 20, further comprising a control system coupled with the microelectrode array and the translation system, the control system configured to detect when the collection device interrupts the electric field and signal the translation system to stop lowering the collection device.

22. The osmolarity measuring system of claim 19, further comprising an indicator and a control system coupled with the microelectrode array and the indicator, the control system configured to detect when the collection device interrupts the electric field and to activate the indicator so that lowering of the collection device can be stopped.

23. The osmolarity measuring system of claim 1, wherein the expulsion device comprises a rubber bulb coupled to the capillary tube, the

rubber bulb configured to be squeezed and apply pressure to the sample fluid.

24. The osmolarity measuring system of claim 1, wherein the expulsion device comprises a control system coupled to the capillary tube, the control system configured to apply pressure to the sample fluid.

25. The osmolarity measuring system of claim 1, wherein the receiving substrate comprises a microelectrode array, with an associated electric field that extends a certain vertical distance form the surface of the receiving substrate, and wherein the electric field generates an electroosmotic flow through the collection device causing the sample of fluid to be expelled.

26. The osmolarity measuring system of claim 1, wherein the receiving device comprises a metal arm configured to capture the collection device.

27. The osmolarity measuring system of claim 26, Wherein the metal arm comprises a hole bored through the center of the metal arm through which the collection device is inserted.

28. The osmolarity measuring system of claim 27, wherein the receiving device further comprises a screw fashioned perpendicular to the bore configured to align the collection device down the center of the bore when tightened.

29. The osmolarity measuring system of claim 1, wherein the expulsion device comprises a wicking mechanism placed in series with the receiving substrate.

30. The osmolarity measuring system of claim 29, wherein the wicking mechanism is a microchannel.

31. The osmolarity measuring system of claim 30, wherein the microchannel comprises enhanced hydrophilic properties.

32. The osmolarity measuring system of claim 31, wherein the enhanced hydrophilic properties are achieved via at least one of a certain geometry, a substrate material and an applied coating.

33. An osmolarity measuring system, comprising:

a fluid sample receiving chip comprising a fluid receiving substrate, the fluid receiving substrate comprising a microelectrode array with an associated electric field extending a certain vertical distance from the surface of the receiving substrate; and

sample delivery system configured to deliver a sample of fluid to the sample receiving substrate, the sample delivery system comprising:

a receiving device configured to capture a collection device used to collect the sample fluid, and

a translation system configured to position the collection device in proximity with the fluid receiving substrate.

34. The osmolarity measuring system of claim 33, wherein the collection device is a capillary tube.

35. The osmolarity measuring system of claim 33, wherein the sample fluid comprises an aliquot of tear film.

36. The osmolarity measuring system of claim 33, wherein the receiving device comprises a first rubber plug configured to capture the collection device.

37. The osmolarity measuring system of claim 36, wherein the receiving device comprises a second rubber plug configured to capture the collection device.

38. The osmolarity measuring system of claim 33, wherein the receiving device comprises forceps configured to capture the collection device.

39. The osmolarity measuring system of claim 38, further comprising a thumb screw coupled to the forceps, the thumb screw configured to control the forceps.

40. The osmolarity measuring system of claim 38, further comprising a computer coupled to a pressure sensor on the forceps, the computer configured to control the forceps.

41. The osmolarity measuring system of claim 33, wherein the receiving device comprising a block, wherein the block includes a groove, the groove configured to receive the collection device.

42. The osmolarity measuring system of claim 41, wherein the block is an angled block.

43. The osmolarity measuring system of claim 41, further comprising a hinged door configured to apply pressure to the collection device.

44. The osmolarity measuring system of claim 33, wherein the translation system is configured to adjust the vertical position of the collection device.

45. The osmolarity measuring system of claim 44, wherein the translation system comprises a non-tapered cylindrical screw.

46. The osmolarity measuring system of claim 45, wherein the translation system further comprises a control system and a motorized screw rotor coupled to the non-tapered cylindrical screw.

47. The osmolarity measuring system of claim 44, wherein the translation system comprises a coarse translation screw and a fine translation screw.

48. The osmolarity measuring system of claim 44, further comprising a control system configured to communicate with the

translation system and position the collection device in proximity with the receiving substrate.

49. The osmolarity measuring system of claim 44, wherein the control system comprises an optical control system configured to identify when the capillary tube interrupts a light source near the receiving substrate.

50. The osmolarity system of claim 44, wherein the translation system uses the electric field to position the collection device in relation to the surface of the receiving substrate.

51. The osmolarity measuring system of claim 50, wherein the translation system is configured to stop lowering the collection device when the collection device is close enough to the receiving substrate to interrupt the electric field.

52. The osmolarity measuring system of claim 51, further comprising a control system coupled with the microelectrode array and the translation system, the control system configured to detect when the collection device interrupts the electric field and signal the translation system to stop lowering the collection device.

53. The osmolarity measuring system of claim 50, further comprising an indicator and a control system coupled with the microelectrode array and the indicator, the control system configured to

detect when the collection device interrupts the electric field and to activate the indicator so that lowering of the collection device can be stopped.

54. The osmolarity measuring system of claim 33, wherein the electric field generates an electroosmotic flow through the collection device causing the sample of fluid to be expelled.

55. The osmolarity measuring system of claim 33, wherein the receiving device comprises a metal arm configured to capture the collection device.

56. The osmolarity measuring system of claim 55, Wherein the metal arm comprises a hole bored through the center of the metal arm through which the collection device is inserted.

57. The osmolarity measuring system of claim 54, wherein the receiving device further comprises a screw fashioned perpendicular to the bore configured to align the collection device down the center of the bore when tightened.

58. The osmolarity measuring system of claim 33, wherein the expulsion device comprises a wicking mechanism placed in series with the receiving substrate.

59. The osmolarity measuring system of claim 58, wherein the wicking mechanism is a microchannel.

60. The osmolarity measuring system of claim 59, wherein the microchannel comprises enhanced hydrophilic properties.

61. The osmolarity measuring system of claim 60, wherein the enhanced hydrophilic properties are achieved via at least one of a certain geometry, a substrate material and an applied coating.